

Preventing Pollution

'P2 Team' makes big strides in effort to reduce industrial pollution caused by JSC processes

Pollution prevention is paying off at JSC. Replacing toxic or hazardous materials with more environmentally friendly materials has helped to achieve an almost 75 percent reduction in the amount of hazardous waste generated here between 1994 and 1997.

In pounds, that means the center has dropped from about 4.4 million pounds in 1994 to 872,000 pounds of hazardous waste in calendar year 1997. Other factors, such as better segregation of wastes, more care in ordering and using only the amount of materials needed to do the job and changing processes to generate less waste all contribute to pollution prevention.

"But, as good as our success has been, we still have a lot more we can do," said Jo Kines, chair of JSC's Pollution Prevention Team.

All federal agencies have been directed by the President in an executive order to develop pollution prevention programs and to reduce releases to the environment and the usage of certain hazardous materials. The President's intentions are to show the public that federal agencies can be the example to industry and the rest of the country by significantly reducing the harmful pollutants that are released into the environment.

In addition to all hazardous waste, one of the specifically targeted chemicals, and the only one currently used in large quantities at JSC, is CFC-113 (Chlorofluorocarbon-113 or Freon 113). CFC-113 is an ozone depleting compound and JSC used 22,000 pounds of it in 1996. That's up from the baseline year of 1994, when 16,000 pounds were used. NASA's goal is to reduce CFC-113 usage by 50 percent by the year 2000, an aggressive goal.

JSC has a Pollution Prevention Team, nicknamed the "P2 Team," made up of a cross organizational group of individuals, that is developing a strategic implementation plan on how further to implement pollution prevention at JSC's facilities.

Team Members include Jo Kines, chair, and Sandy Parker, Environmental Services Office; Doug Conover, Plant Engineering Division Mechanical Branch; Cinda Chullen, Engineering Directorate; Mike Pedley, Materials and Failure Analysis Branch; Sandra Tetley, Supply and Materials Branch; and Jim Pawlowski, Space Science Branch.

The strategic implementation plan will include identifying ways to include contractors in our program, disseminating information on pollution prevention, identifying training requirements and how to get funding for prevention projects. To find out where current barriers to prevention exist, the P2 Team has joined up with Rothe's Bldg. 9 clean room personnel to look for ways to reduce the usage of CFC-113 and to implement a specific pollution prevention project.

One area where tremendous success already has been

achieved is the photographic processing laboratory in Bldg. 8. A Photo Waste Pollution Prevention Team was formed to look at ways to reduce the amount of photochemical processing waste that comes from developing photos and developing flight film. Team members included: Sandy Parker, chair, JSC Environmental Services Office; Gary Cook and Ric Slater, JSC Imagery and Publications Office; Tom Scarcella and Bob Bode, DynCorp; Doug Grieco, Johnson Controls World Services; and Gary Wessels, JSC Plant Engineering Division.

The team met for a year from August 1993 until August 1994 and the photographic lab is working to implement the recommendations identified by the team. Some of the waste was eliminated entirely and some was rendered less hazardous.

All those activities have reduced hazardous waste from Bldg. 8 from almost 7 million pounds in 1992, with a cost for disposal at over \$250,000, to about 700,000 pounds in 1997, with a disposal cost of about \$50,000.

The reductions came by eliminating a hexavalent chromium cleaning solution; reduction in the use of formaldehyde; replacing a ferricyanide bleach process with a less toxic, reusable bleach; and by monitoring and adjusting the chemistry of certain processes to maximize the recovery of silver and reuse of solutions.

JSC also is participating in a couple of agencywide teams that are looking for replacements for CFC-113 in the cleaning and verification process. CFC-113 is a standard that has been used for many years in aerospace systems because it has been proven safe and reliable, and it leaves no residue and is compatible with oxygen systems such as those used on the space shuttle. The challenge for the agencywide teams is to find a chemical that will do the same quality job, be safe for humans to work with and will not contribute to the depletion of Earth's ozone layer.

Pollution prevention can be as simple as fixing a leak to prevent the generation of a spill, cleanup of waste or changing a procedure to replace a non-essential, hazardous chemical with a less hazardous alternative. Often, pollution prevention activities result in increased operating efficiency, fewer product losses, reduced cost for disposal, reduced reporting and regulation and, best of all, a healthier workplace and environment. Generally speaking, most pollution prevention activities are just good business sense and must be economically and technically feasible, Kines said.

Anyone interested in participating on the JSC Pollution Prevention Team or in learning more about pollution prevention may call Jo Kines at x33218 or E-mail her. If you have a pollution prevention idea or want to tell someone about your success story, contact anyone on the team. □



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1) Elizabeth Reichardt, a Rothe employee, flushes parts with CFC-113 in the Bldg. 9 clean room. 2) Ronald Price, a Rothe employee, cleans an underground water filter in the pre-clean room. 3) Members of the JSC Pollution Prevention team and Bldg. 9 workers who participated in an assessment of the clean room, are, back row, from left: Dennis Bell, Rothe; Sandra Tetley, Supply and Materials Branch; Ruby Long and Wanda Steiger, Rothe; Carolyn Krumrey, Manufacturing, Materials and Process Technology Division; Ronald Price, Rothe; and Doug Conover, Mechanical Operations Branch. Front row: Cinda Chullen, Engineering Directorate; Anne Ostergaard, IT Corp.; Sandra Parker and Jo Kines, Environmental Services Office. 4) Wanda Steiger, a Rothe employee, performs initial cleaning of an underground water filter. Pre-cleaning and cleanliness verification are done with CFC-113. 5) Elizabeth Reichardt, a Rothe employee, uses a CFC-113 vapor degreaser. 6) Roxanne Harter, a Rothe inspector, reads a particle count for cleanliness verification as Dennis Bell, a Rothe lab technician, prepares another sample.

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